



# Massachusetts

## Biobased Fuels, Power, and Products State Fact Sheet

### Growing a Cleaner, Stronger Economy in Massachusetts

In 1999 approximately 2.1 billion kWh of net electricity generation was produced from biomass resources in Massachusetts. Approximately 95% of this electricity was generated from by steam generators fueled with municipal solid waste (MSW) or landfill gas. One of the MSW facilities is the Wheelabrator Milbury facility, which processes 1,500 tons of MSW per day and has a capacity of 40 MW.

In addition to electricity, biomass is being used as a heating fuel in Massachusetts. The largest example is at Mount Wachusett Community College in Gardner, where a recently completed project has converted the all-electric heating system of the college's main building to a hot water (hydronic) system with a Messerschmidt woodchip boiler, using waste woodchips from nearby sawmills. The new plant is expected to burn 1,000 dry tons of woodchips per year, replacing 3.3-megawatt hours of electricity for space heating and domestic hot water. The college has been selected under the DOE Small Modular Biopower Systems Project to host a demonstration installation of a 15 kW gasifier/cogeneration unit manufactured by Community Power Corporation (CPC) of Colorado, with installation expected to occur in 2003.

Massachusetts has utilized other biomass resources for generating electricity. For example the Deer Island Sewage Treatment Plant, which protects the Boston Harbor against pollution from metropolitan Boston's sewer systems, is an innovative facility that utilizes bioenergy from anaerobic digester gas. Methane gas produced in the digesters is used for onsite co-generation of heat and power, which provides heat for the digesters and reduces the treatment facility's demand for purchased electricity. In addition, sludge from the facility is shipped by barge to a pelletizing facility at Fore River where it is processed into fertilizer products. (cont'd)

### Biobased Fuels, Power, and Products in Massachusetts

| Bio-Industry | Sales (\$1,000) | Employees | Capacity | Number of Facilities |
|--------------|-----------------|-----------|----------|----------------------|
| Power        | N/A             | 110       | 240 MW   | 13                   |
| Fuels        | 573             | 7         | N/A      | 1                    |
| Products     | 86              | 1         | - -      | 6                    |

N/A - no information available

- - Comparative capacity data not available among products

### Federal R&D Partners

BC International Corporation  
(Dedham)

Boston University  
(Boston)

Clark University  
(Worcester)

Metabolix, Inc.  
(Cambridge)

Physical Sciences, Inc.  
(Andover)

Systems Center  
(Cambridge)

University of Massachusetts  
(Amherst)

### Biomass Resources

**Corn:** 22,000 acres planted

**CRP:** 121 acres enrolled

**MSW:** 8,141,000 tons generated

**Forest Land:** 3,126,000 acres

**Poultry:** 356,000 head

**Livestock:** 67,500 head



Massachusetts is home to the largest domestic supplier of biodiesel, World Energy Alternatives based in Chelsea, which has 75% of the domestic market share. Biodiesel is used in Massachusetts for a variety of grassroots projects. For example, more than 300 vehicles owned by the University of Massachusetts-Amherst are now running on biodiesel.

State activities to promote the use of biomass include a Renewable Energy Trust begun in 1997 under the electric utility restructuring legislation. The fund is supported through a system benefits charge with total funding of roughly \$150 million through 2002, and approximately \$20 million per year for an undefined period beyond 2002. The principal aim of the program is to promote the use of renewable and efficient technologies including wind, fuel cells, biomass, low-impact hydroelectric, solar photoelectric and advanced storage devices. Another provision of the 1997 electric utility restructuring legislation established a Renewable Energy Portfolio Standard, under which retail suppliers of electricity in Massachusetts are required to include in their supply portfolios small but annually increasing percentages of electricity from new renewable energy sources; eligible sources include landfill methane, anaerobic digester gas, liquid biofuels, and solid biofuels that are used in advanced technology, low-emission power plants, as well as wind, solar, and fuel cells that use renewable fuels.<sup>1</sup> In addition, the state offers both corporate and personal income tax deductions for any income received from the sale of, or royalty income from, a patent that is deemed beneficial for energy conservation or alternative energy development.

## Federally Funded Biomass RD&D in Massachusetts

Select a project  
title for details

### U.S. Department of Agriculture

- Forest Dynamics Across Soil Resource Gradient: A Mechanistic and Modeling Approach
- Eco-Physiological Controls on Establishment and Growth of Native and Non-Native Woody Plants
- Ammonium as a Factor in Plant Responses to Environmental Stresses
- Silvicultural Options for Combined Wildlife and Recreation Goals in Massachusetts Forests

### U.S. Department of Energy

- Integration of an Advanced Cellulase-Producing Ethanologenic Bacteria to Significantly Reduce the Cost of Ethanol from Biomass
- Biomass Refinery for Production of Polymers and Fuel
- Novel Methods for Continuous In-Site Measurement of Alkali in Biomass
- Chemicals from Ligno Cellulose
- Wood Adhesive Formulations from Bark-Derived Phenols
- Ethanol Production
- Mount Wachusett Community College
- Biomass Pyrolysis for Hydrogen Production

### U.S. Department of Transportation

- Altoona Bus Testing Management Oversight: Research in Progress

For additional information on RD&D Projects, please click on the project title.

For additional information on state activities, please contact:

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